

## CLAIMS

1. An injection moulding process for the injection into a mould of a single-phase solution of polymer and propellant which is prepared in a plasticising cylinder of an injection moulding machine, characterised in that upon opening of a guard device of the injection moulding machine by the person operating the machine the connection between the plasticising cylinder and the mould is interrupted and the maximum speed of displacement of the screw arranged in the plasticising cylinder is limited.

2. An injection moulding process according to claim 1, characterised in that the force acting on the screw is reduced to such a degree that the pressure level in the plasticising cylinder is just sufficient to keep the single-phase solution of polymer and propellant gas prepared therein in the single-phase condition.

3. An injection moulding process according to claim 2, characterised in that a mass pressure of between about 100 and 300 bars is maintained in the plasticising cylinder.

4. An injection moulding process according to claim 1, characterised in that the speed of the screw is reduced to less than 1/10, preferably to less than 1/20, of the usual maximum speed in the injection operation.

5. An injection moulding process according to claim 1, characterised in that the maximum speed of the screw is reduced to zero if an end position monitoring means does not signal the interruption in the connection between the plasticising cylinder and the mould.

6. An injection assembly for an injection moulding machine, in particular for carrying out the process according to claim 1,

comprising a screw mounted in a plasticising cylinder and an injection piston which moves the screw in the longitudinal direction and which is mounted in an injection cylinder, wherein there is provided a supply conduit for the injection cylinder having a control valve which can be shut off, characterised in that there is provided an additional conduit (14) which by-passes the control valve (13) and in which are arranged a device (17) for reducing the amount of the pressure fluid flowing to the injection cylinder (7) and possibly a device (16) for reducing the pressure.

7. An injection assembly according to claim 6, characterised in that the device for reducing the pressure of the feed flow of pressure fluid is a pressure-reducing valve (16).

8. An injection assembly according to claim 6, characterised in that the device for reducing the amount of the feed flow of pressure fluid is a throttle (17).

9. An injection assembly according to claim 6, characterised in that a control valve (15) which can be shut off is further provided in the additional conduit (14).

10. Apparatus for carrying out the process according to claim 1, characterised in that an electric motor (20) whose rotary speed is variable is provided for driving the screw.

11. Apparatus according to claim 10, characterised in that the torque of the electric motor (20) is variable.

12. An injection assembly according to claim 6, characterised in that the plasticising cylinder (1) is provided with a preferably hydraulically actuated closure nozzle (5) with at least one end

position switch (6), wherein the control valve (15) arranged in the additional conduit (14) or the electric motor (20) is controllable by means of a control system (10) in dependence on the signals of the end position switch (6).

13. An Injection assembly according to claim 6, characterised in that provided in the plasticising cylinder (1) is at least one pressure sensor (4) for monitoring the pressure in the plasticising cylinder (1).